

002277 297260

10

FIG. 1

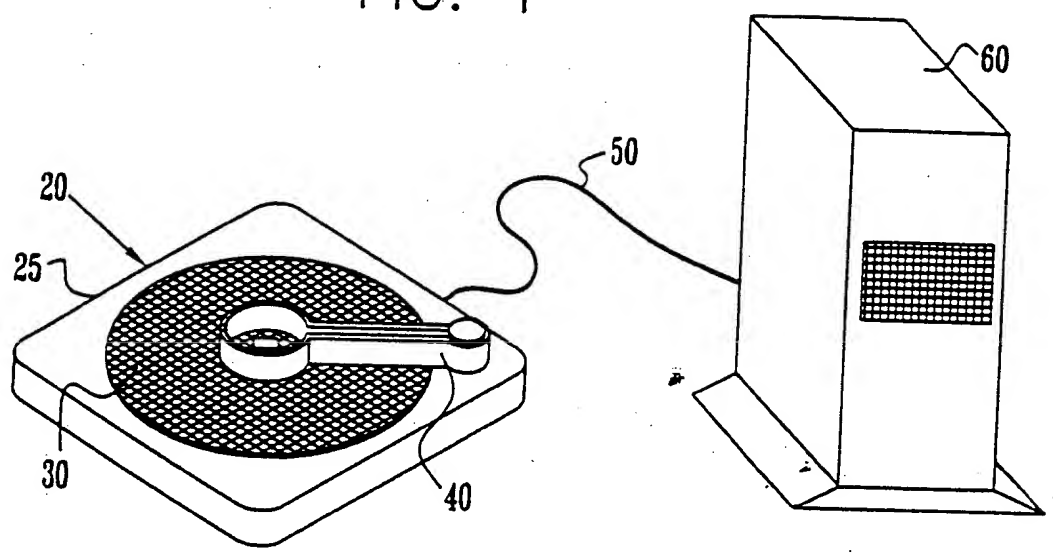


FIG. 2

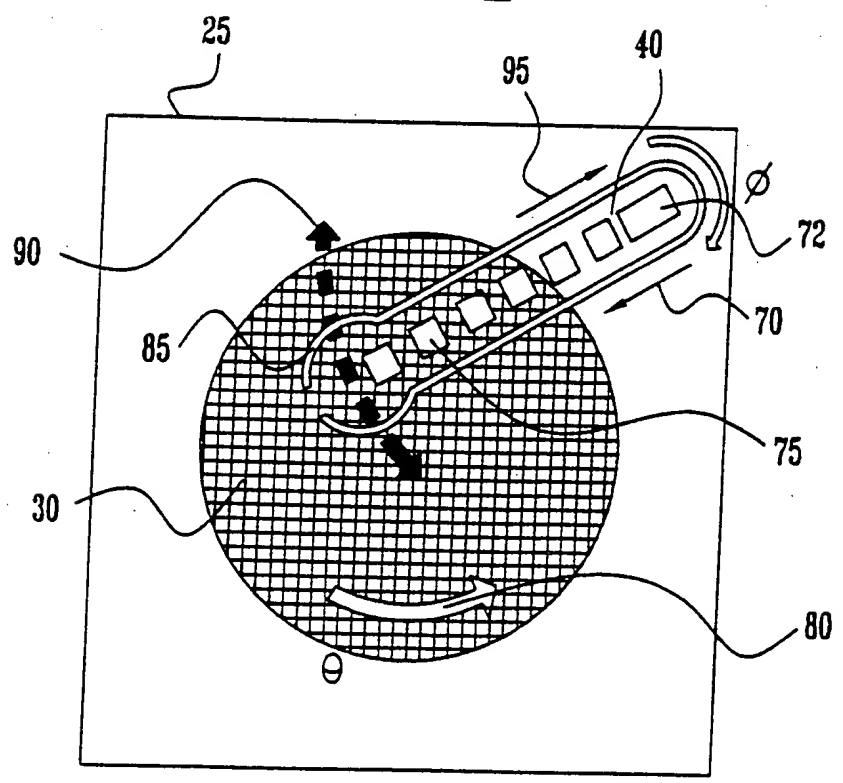


FIG. 3

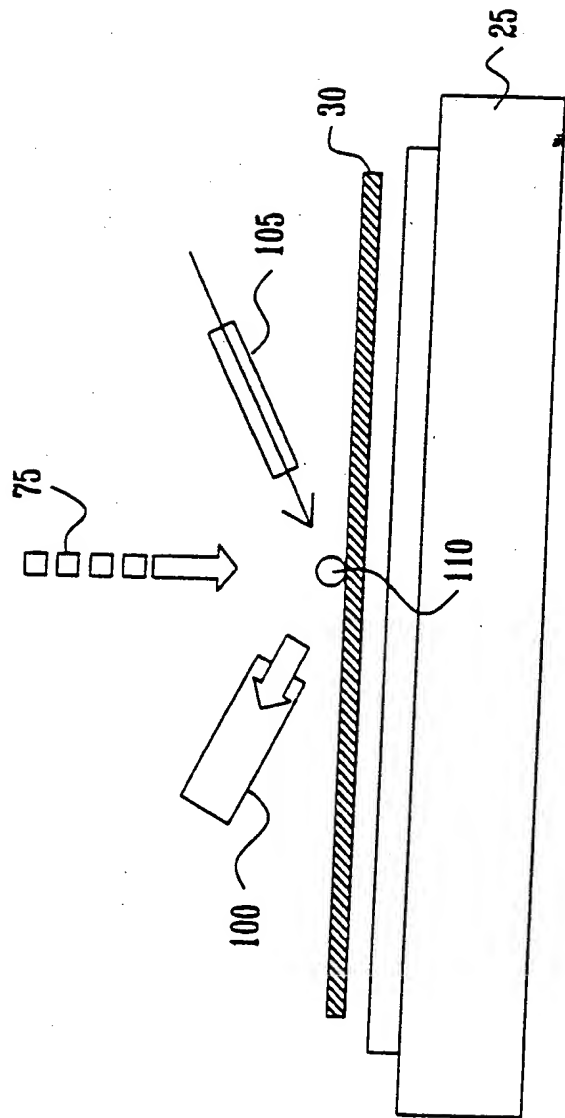


FIG. 4

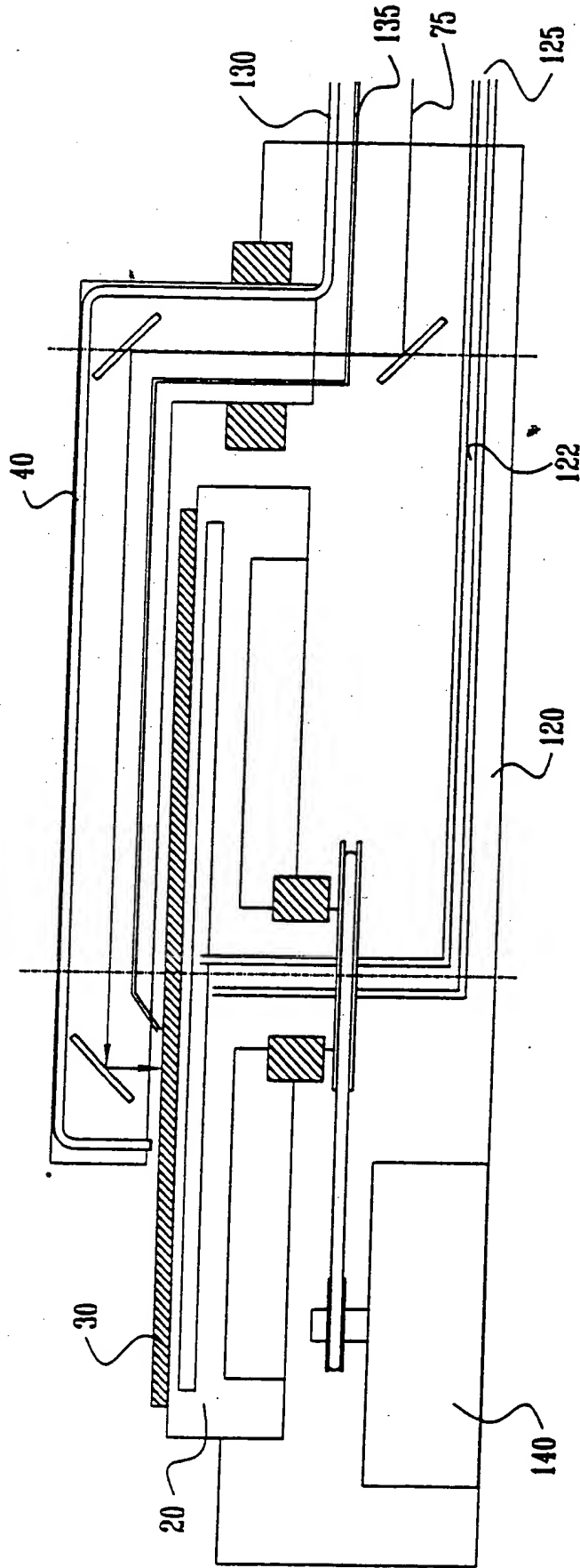


FIG. 5

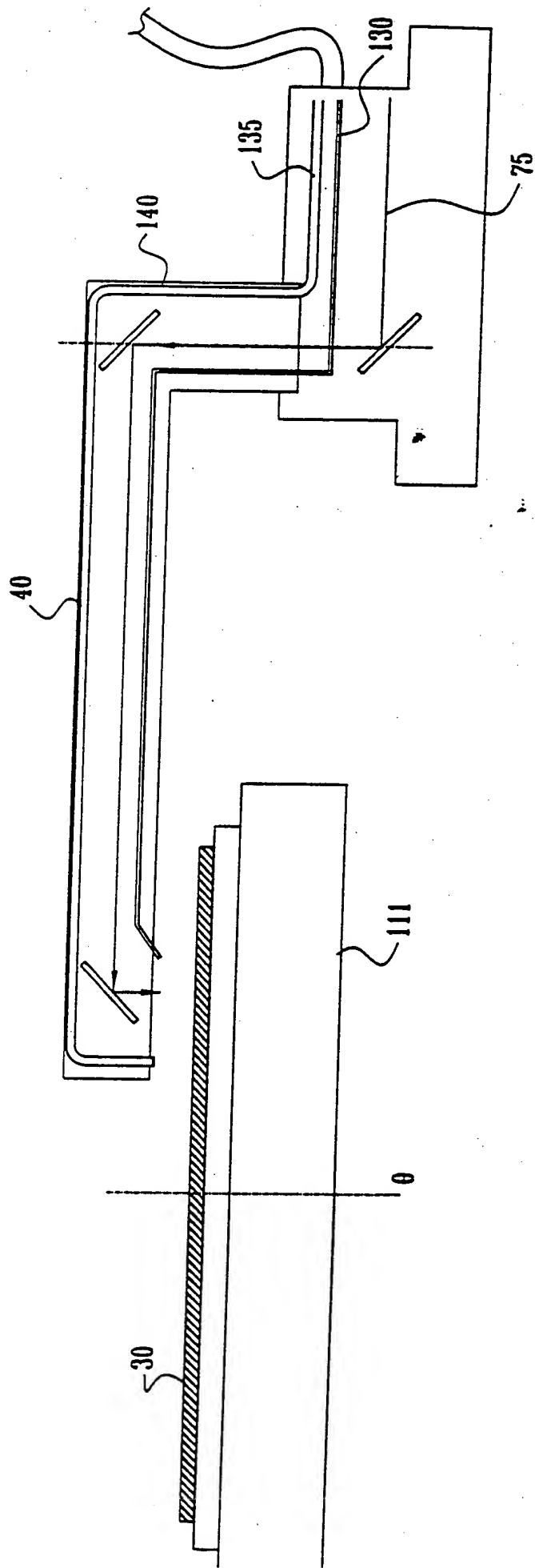


FIG. 6

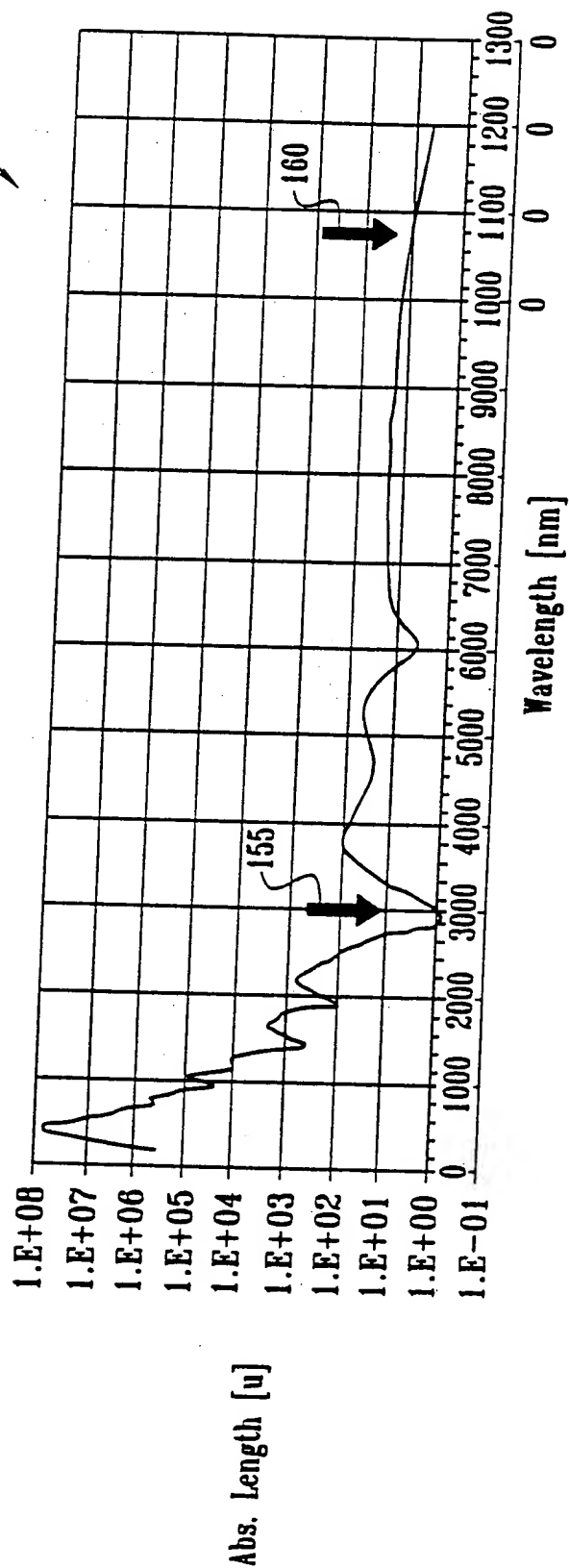
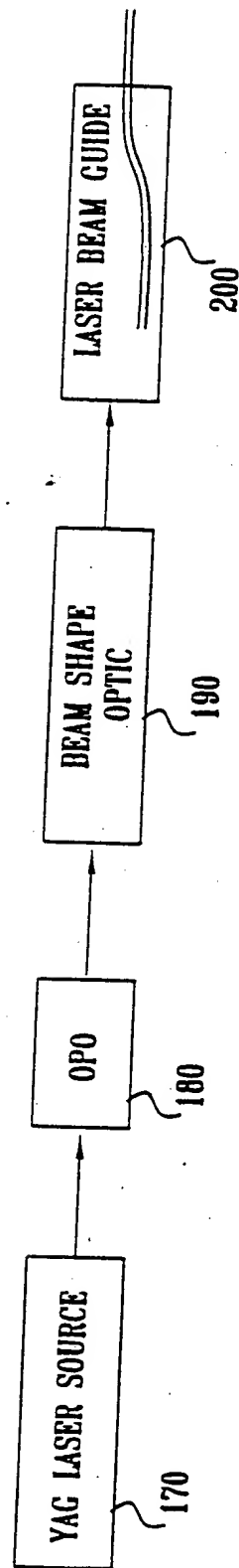


FIG. 7



YAG LASER SOURCE

OPC

081

BEAM SHAPE OPTIC

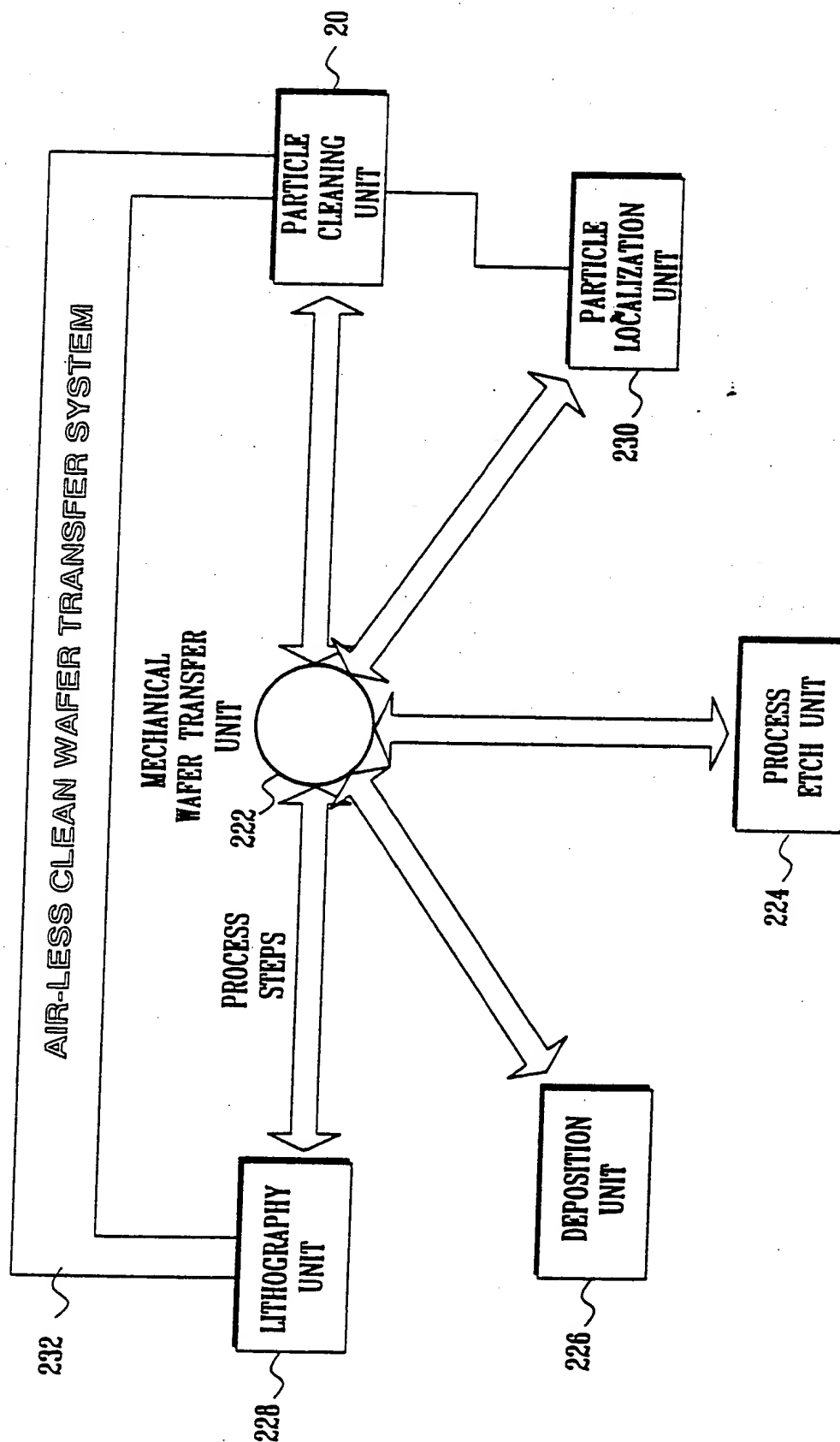
190

LASER BEAM GUIDE

200

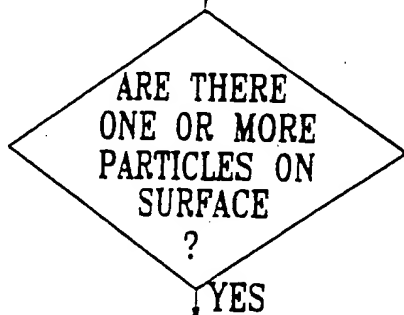
FIG. 8

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PARTICLE LOCALIZATION UNIT
CHECKS SOLID-STATE SURFACE OF
SUBSTRATE

FIG. 9



SUBSTRATE
TRANSFERRED TO PROCESS

STOP

PARTICLE LOCALIZATION UNIT
TRANSFERS SUBSTRATE
TO PARTICLE REMOVAL UNIT

PARTICLE REMOVAL UNIT
RECEIVES PARTICLE
COORDINATES FROM
PARTICLE LOCALIZATION UNIT

CLEANING ARM ROTATES TO AREA
OF PARTICLE (Φ AXIS)

SUBSTRATE ROTATES TO MATCH
ARM POSITION (PARTICLE UNDER
ARM (θ AXIS))

ARM TRANSFERS LIQUID TO
SUBSTRATE SURFACE

LIQUID FILM FORMED

LASER IMPINGES ON LIQUID FILM

LIQUID FILM EXPLOSIVELY
EVAPORATES

PARTICLE IS DISLODGED FROM
SUBSTRATE SURFACE

PARTICLE REMOVAL UNIT
REMOVES
PARTICLE/CONTAMINANT

00221-1012460

PARTICLE LOCALIZATION UNIT
CHECKS SOLID-STATE SURFACE OF
SUBSTRATE

FIG. 10

